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Euro Food Chem XII conference: Strategies for Safe Food

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Report Highlights:
The European Federation of Chemical Societies (FECS) held its twelfth Euro Food Chem conference: Strategies for Safe Food in Bruges, Belgium from September 24-26, 2003. Its focus was on analytical, industrial and legal challenges to the food processing sector and the difficulty of communications on food safety. Highlights were sessions on consumer perception of food safety, the precautionary principle and problems for the quantification of thresholds of Biotech varieties.

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The Conference

Euro Food Chem XII: Strategies for Safe Food, was the bi-annual conference of the European Federation of Chemical Societies (FECS) and the Royal Flemish Chemists Society (KVCV). It was held in Brugge, Belgium from September 24-26, 2003. (http://allserv.rug.ac.be/EFCXII).

Topics of this three-day conference were:
Session 1: Risk assessment, risk management and risk communication.
Session 2: Novel chemical and physical methods in food microbiology.
Session 3: Food additives, Biotech crops and process related substances.
Session 4: Contaminants and residues.
Session 5: Naturally occurring toxicants.

The conference was opened by Dr. De Brabander (President of KVCV), Dr. Vanthemsche (Administrator General of the Belgian Agency for the Safety of the Food), Mr. Fenwick (President of FECS), and Dr. Eklund (Chairman of the Scientific Committee).

Highlights

Consumer perception

The plenary session by Prof. Verbeke of the University of Ghent, addressed the discrepancy between scientific fact and consumer perception. Analyzing the Belgian cases of BSE, dioxin, Coca-Cola and acceptance of functional foods, he demonstrated how sensitive consumer perception is to food events and the important role (the lack of) communication had played in these crises. The public tends to misjudge the relative risks from food safety issues and little relation exists between the perceived hazard of a food safety concern and its scientifically proven hazard. Facilitating conditions that turn misjudgment into a food crisis are fright factors, panic elements and media triggers. Prof. Verbeke gathered data about how costly it is to restore consumer trust by quality advertisement.

In the case of Belgian beef consumption at the end of the nineties, he found a five to one impact ratio from negative press over advertisement. Moreover, the first is free, works quickly and highly effective, while the latter is expensive and works very slowly.

Prof. Verbeke also asserted that consumers care little for traceability. Traceability is only a good defensive strategy for industry but has little positive interest for the public. A free internet campaign on traceablilty in Belgium only attracted 325 calls in three weeks time. The fact that branded products are viewed with more trust by consumers, was clearly demonstrated by the fact that Coca-Cola sales returned to their previous level in only one month after the outbreak of the Coca-Cola false alarm.

Precautionary principle

Ms. Dejaegher, from the law firm Allen and Overy, Belgium, gave a presentation on the legal aspects of the European precautionary principle. She pointed out that this principle has a legal basis because it is written in the European treaty but that it offers no legal certainty because there is no formal definition. In a science-based approach, the U.S. rejects the precautionary principle as an insufficient policy principle to manage uncertainty, while the majority of European authors define it as a legal principle, creating specific rules and obligations, however, without determining acceptable risk levels and without any guidelines for their determination. Ms. Dejaegher argues that the precautionary principle is a strategic principle with a social, political, ethical, cultural, scientific and technical content. For each

decision-making process, a balance between these aspects has to be found and to achieve this a new regulatory model is needed. Until then, the legal interpretation is left to the discretion of the European Court of Justice (ECJ). The European Commission has pointed out six parameters that measures should meet when taken on the basis of the precautionary principle:

- Proportional to the chosen level of protection;
- Non-discriminatory in their application;
- Consistent with similar measures already taken;
- Based on an assessment of the potential benefits and costs of action or lack of action (including a cost and benefit analysis where appropriate and feasible);
- Subject to review in the light of new scientific data;
- Capable of assigning responsibility for producing the scientific evidence necessary for a more comprehensive risk assessment;

Meanwhile the European Court of Justice has already had to evaluate the principle in a number of cases. Six cases of major importance to understanding the ECJ view of the precautionary principle are:

- The British BSE case: the ECJ decided that uncertainty about the existence and the extent of risk to human health was sufficient to ban British beef from trade within the Community.
- Virginiamycin case: withdrawal of Virginiamycin from the list of authorized feed additives.
- Bt 176 case: as a precautionary assessment already had taken place at the European level, France was not entitled to invoke the precautionary principle itself.
- Trichloroethylene case: as no safety threshold was established, the Swedish government was allowed to ban the product altogether.
- Pfizer Animal Health cases: the prohibition of the use of antibiotics in animal feed. A science-based approach is essential; pure hypothetical risks do not justify restrictive measures.

The ECJ verdicts concerning the precautionary principle can be found at http://europa.eu.int/eur-lex/en/.

Ms. Dejaegher further argued that the precautionary principle does comply with the WTO requirements since it does not discard objective evaluations, risk assessment, cost benefit analysis, risk management, risk communication or other recognized aspects of risk analysis. However, if Europe wants the precautionary principle to be accepted by the international community, the implementation of the process and the tools must be discussed at the international level. This raises the issue of standardization of scientific processes and instruments used for the assessment of scientific data, or at least common agreements on the mutual recognition of these processes and instruments for the assessment of scientific data. Therefore, more international collaboration in scientific research, information sharing, risk communication and other non-trade restrictive approaches are indispensable.

A European network, called Trustnet, is already active in the implementation and discussion surrounding the necessary framework for risk management. It is a pluralistic and interdisciplinary network involved in “Risk Governance”, with support of the European Commission DG RTD. The expression “Risk Governance” is used to stress that the scope is not restricted to risk alone, but includes also the justification of activities that give rise to risks. (See www.trustnetgovernance.com).

Traceability and labeling legislation versus biotech analysis science

Dr. Van den Eede, from the European Commission research center ISPRA, Italy, entered into the problem of detection, identification and quantification of Biotech products in food in the

context of EU legislation. He pointed out that new threshold regulations are being prepared as a complement of Directive 01/018/EC, which will exempt unintentional inclusion of EU-approved Biotech varieties' threshold at 0.9%, compared to 1% at present, and a threshold tolerance of 0.5% for unapproved Biotech varieties instead of the present zero-tolerance. (See http://gmoinfo.jrc.it).

The problem with these regulations, according to Dr. Van den Eede, is that no practical definition is given for this threshold. Testing for Biotech varieties quantifies the modified DNA content, but this is not a fixed percentage of total weight. Modified DNA content depends on the number of DNA copies inserted, the number of chromosomes of the species, and on the origin of the tissue. Endosperm tissue is typically triploid while germ tissue is diploid. He called this the biological error factor, which comes on top of the sampling error and the analytical error. Especially the sampling error is also of big concern. Although little is still known, sampling analysis indicates that presence of Biotech variety thresholds in shiploads is not homogenous but punctual. This means that statistically reliable sampling requires large sample numbers and repeatability of results is very problematic.

The analytical error should not be underestimated either. The "European Network of GMO Laboratories" (ENGL) consists of 50 laboratories, including all EU enforcement laboratories, plus Norway, Switzerland and all new member states (as observers only). It is an enormous challenge to standardize all analysis in this network and especially to bring the laboratories in the new member states up to par. The production of the necessary reference materials and the validation of all laboratory protocols require major efforts. All this makes correct enforcement of Biotech-related regulations a difficult task. The urgency for these regulations was underscored by the fact that since the voting of Directive 01/018/EC 35 new Biotech notifications had been submitted.

Summary of selected presentations

Session 1: Risk assessment, risk management and risk communication.

Mrs. Lauwaars, from the European Institute for Reference Materials and Measurements in Geel, Belgium, elaborated on the challenges of accurately quantifying residue levels and the difficulty of making decisions about seizing or taking other actions against food lots containing residue levels that marginally exceed legal limits. She presented results of ring testing between certified laboratories in the present member states and the statistical variation in their results. She explained the difficulty of standardizing member state laboratory procedures and especially highlighted the large gap acceding member state laboratories had to bridge to meet the required technical and scientific standards mandated by European food legislation.

Mr. Eppe, University of Liege, Belgium, spoke about the complexity of dioxin analysis and presented the latest scientific developments in their identification and quantification. Mr. Müller, from Procter and Gamble, Germany, gave an overview of the implications for the processing industry.

Session 2: Novel Chemical and physical methods in food microbiology.

Dr. Gould, University of Leeds, United Kingdom, in his plenary session, gave an overview of recent progress with new testing methods and the consequences for food safety monitoring programs. Other speakers debated advances in microbial risk assessment and in the detection of viruses, while Dr. Boenke, from the European Commission, presented an overview of the evolution of scientific needs and the change in focus achieved in the consequent European Framework Programs. He emphasized the change in approach for the

current 6th Framework Program, which focuses on a traceability and monitoring process "from fork to farm", whereas the 5th Framework Program had a "from farm to fork" approach. (See http://europa.eu.int/comm/research/index_en.html)

Session 3: Food additives, Biotech foods and process related substances.

Prof. Schieberle, from the University of Munich, Germany, gave an extensive overview of the chemistry involved in thermal food processes (Maillard reactions). In subsequent presentations, closer attention was given to the production of acrylamide during heat processing procedures and the oxidation of cholesterol during treatment and storage. Other speakers presented new developments in technology for the detection and quantification of biotech food products through peptide nucleic acids (PNA's).

Session 4: Contaminants and Residues

In honor of the deceased first president of FECS, Dr Czedik-Eysenberg, a special lecture session was installed. Elected for this first honorary session was Professor Carlos Van Peteghem, University of Ghent, Belgium, on "Drug Residue Analysis in Food and Feed: State-of-the-Art for Growth Promoters." His lecture consisted of three parts:

A: The history of EU legislation leading to the Council Directives 96/22/EC and 96/23/EC, concerning the prohibition of the use in stock farming of certain substances having a hormonal action and their monitoring.
B: The conventional technique of residue analysis.
C: Special topics such as new products to monitor and new methods to do so.

Other speakers presented new developments in the analysis of hormonal products, residues from food contact materials and a few specific residues.

Mr. Wilson, Central Science Laboratory, United Kingdom, elaborated on developments in sampling and analysis of pesticide residues in food. He discussed the need to shorten the lead-time for results of testing and the crucial role of sample taking and preparation. This need for increased and cheaper testing arises from the fast increase in testing numbers as the result of new food safety legislation. Mr. Wilson, as an example, discussed the QuEChERS method, which stands for Quick, Easy, Cheap, Effective, Robust and Safe.

Session 5: Naturally occurring toxicants.

In his plenary session, Dr. Bergwerff, University of Utrecht, The Netherlands, gave an overview of naturally occurring toxicants (NOT's) in our food: mycotoxins, phycotoxins, phytotoxins, zootoxins and bacterial toxins. He briefly discussed their toxic effects and their role in the history of famous food poisonings. Subsequent presentations focused on specific topics like mycotoxin intakes in EU member states. The last presentation of this session compared quality aspects of organic and conventional farming. It concluded that the quality of crops depends more on climate and growing conditions and less on the farming system.

USDA participation and announcement of Euro Food Chem XIII

Dr. Michael K. Hoffman and Rita Kishore, both from the Residue Surveillance Division of USDA/FSIS, assured American participation in this conference. Euro Food Chem XIII was announced to take place, September 21-23, 2005, in Hamburg, Germany.